

## Tuberculosis in Arizona, 2000

### Morbidity

There were 16,372 cases of active tuberculosis (TB) reported in the United States (U.S.) in the year 2000. Of these, 261 (1.6%) occurred in Arizona. While the U.S. has seen eight consecutive years of decline in the number of cases since 1993, this trend is not apparent in Arizona. In 1992, at the height of the TB resurgence nationwide, Arizona had 258 cases, nearly the same number as the 261 cases reported in 2000 (Table 1). The mean number of TB cases in Arizona from 1990 to 2000 was 273 with a minimum of 228 cases in 1993 and maximum of 324 cases in 1991. However, due to population growth statewide, TB case rates have declined from 7.5 per 100,000 persons in 1990 to 5.1 in 2000. The latter is higher than the Healthy People 2000 target rate of 3.5 per 100,000 persons, but lower than the national average of 5.8 per 100,000 persons (Figure 1). Only 22 states have met or exceeded the 2000 target goal. Arizona ranked 18<sup>th</sup> nationwide in TB case rates and 19<sup>th</sup> in number of cases in 2000. The majority of TB cases in Arizona in 2000 were of Hispanic ethnicity (53.3%), followed by White, non-Hispanic (15.7%), American Indian (11.5%), Asian (10.7) and Black, non-Hispanic (7.7%). The mean age was 46.5 years and 68.2% were male (Table 2).

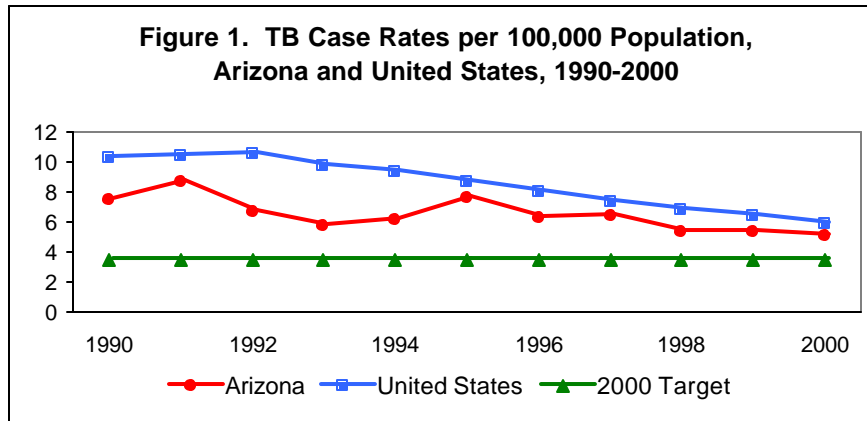
**Table 1. Tuberculosis Cases and Case Rates per 100,000 Population, Arizona and United States, 1990-2000**

Year <sup>b</sup>	Arizona			United States <sup>a</sup>	
	Cases	Population <sup>c</sup>	Rate	Cases	Rate
1990	275	3,665,882	7.5	25,701	10.3
1991	324	3,763,372	8.6	26,283	10.4
1992	258	3,858,825	6.7	26,673	10.5
1993	228	3,946,975	5.8	25,287	9.8
1994	247	4,036,875	6.1	24,361	9.4
1995	317	4,184,723	7.6	22,860	8.7
1996	282	4,462,717	6.3	21,337	8.0
1997	296	4,595,379	6.4	19,851	7.4
1998	254	4,722,097	5.4	18,361	6.8
1999	262	4,924,350	5.3	17,531	6.4
<b>2000</b>	<b>261</b>	<b>5,130,632</b>	<b>5.1</b>	<b>16,372</b>	<b>5.8</b>

<sup>a</sup>Data from U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.

<sup>b</sup>Year reported reflects the year case was verified by ADHS.

<sup>c</sup>1990 and 2000 population from 1990 and 2000 U.S. Census data, respectively. Interim years from Department of Economic Security population projections.



**Table 2. Tuberculosis Cases by Ethnicity, Gender and Age Group, Arizona, 2000**

Age Group									
	Under 5	5 - 14	15 - 24	25 - 44	45 - 64	65+	No.	Total (%) <sup>a</sup>	Rate <sup>b,c</sup>
White, Not Hispanic									
Male	2	1	1	9	11	9	33		
Female	0	0	0	4	2	2	8		
Total	2	1	1	13	13	11	41	(15.7)	1.3
Black, Not Hispanic									
Male	0	0	2	8	4	3	17		
Female	0	0	1	1	0	1	3		
Total	0	0	3	9	4	4	20	(7.7)	13.3
Hispanic <sup>d</sup>									
Male	3	2	12	40	22	14	93		
Female	7	1	11	11	7	9	46		
Total	10	3	23	51	29	23	139	(53.3)	10.7
Native American <sup>e</sup>									
Male	0	1	2	4	8	2	17		
Female	0	0	1	1	7	4	13		
Total	0	1	3	5	15	6	30	(11.5)	12.9
Asian <sup>f</sup>									
Male	0	1	2	6	1	5	15		
Female	0	0	1	5	3	4	13		
Total	0	1	3	11	4	9	28	(10.7)	29.5
Unknown									
Male	0	0	0	2	0	1	3		
Female	0	0	0	0	0	0	0		
Total	0	0	0	2	0	1	3	(1.1)	3.6
AGE GROUP TOTALS									
Male	5	5	19	69	46	34	178	(68.2)	
Female	7	1	14	22	19	20	83	(31.8)	
TOTAL	12	6	33	91	65	54	261	(100.0)	5.1
(%)	(4.6)	(2.3)	(12.6)	(34.9)	(24.9)	(20.7)	(100.0)		

<sup>a</sup>Percent of total cases.

<sup>b</sup>Rate per 100,000 population.

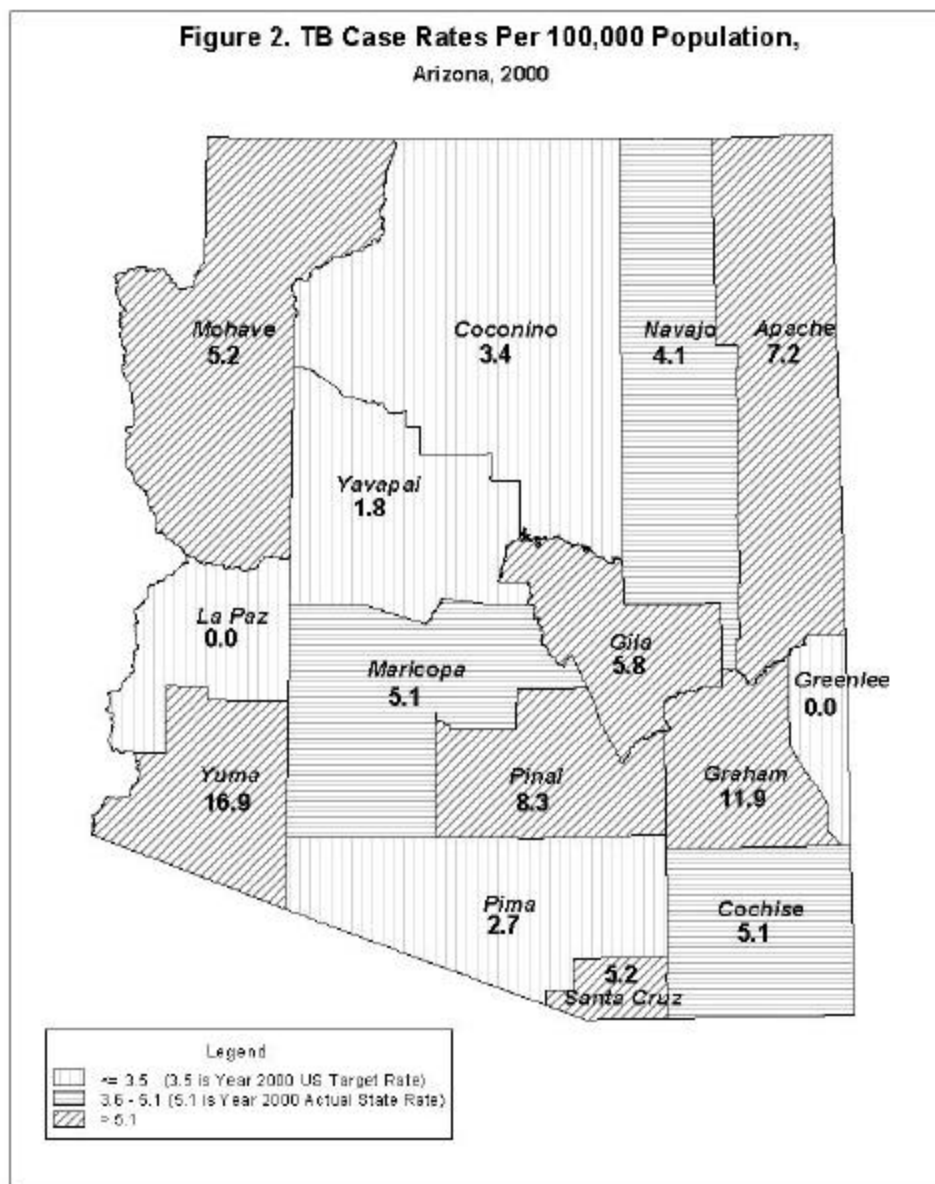
<sup>c</sup>1990 and 2000 population from 1990 and 2000 U.S. Census data, respectively. Interim years from Department of Economic Security population projections.

<sup>d</sup>Persons of Hispanic origin may be of any race.

<sup>e</sup>Includes American Indians and Native Alaskans

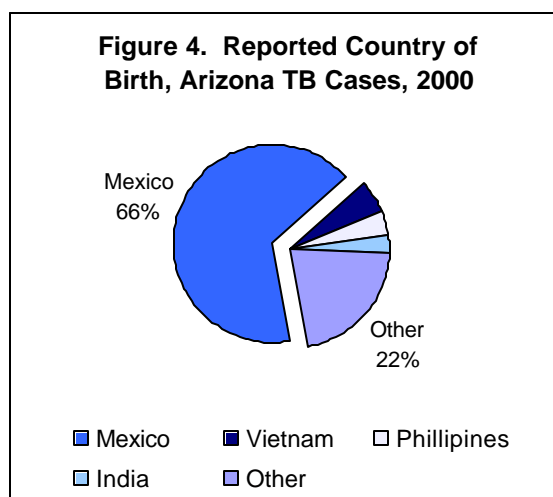
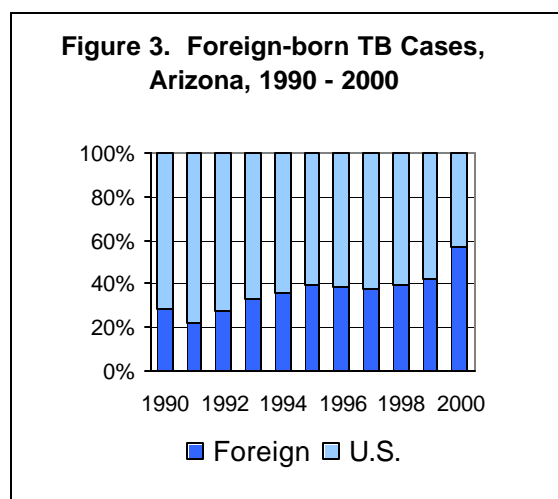
<sup>f</sup>Includes Pacific Islanders

Four of Arizona's 15 counties accounted for 85% of the state's TB cases. Maricopa County, which includes Phoenix, the tenth largest metropolitan area in the U.S., led the state with 157 cases (60.2%). Yuma County, on the U.S.-Mexico border, was second with 27 cases (10.3%). Pima County, also on the U.S.-Mexico border and the location of Tucson, Arizona's second largest urban area, had 23 cases (8.8%). Pinal County, which contains Arizona's two largest state prison facilities, three private prisons, an INS processing center, and a county jail had 15 cases (5.7%); of these, 13 were diagnosed in a correctional facility. Two of the remaining eleven counties, Greenlee and La Paz, reported no TB cases in 2000. Yuma County had the highest rate among all counties (Figure 2).



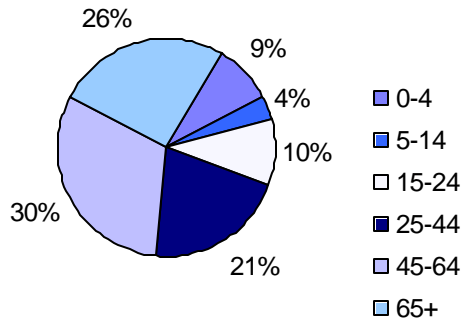
## Risk Factors

Arizona has observed the same trend of an increasing proportion of cases among the foreign-born as seen nationally. The year 2000 marks the first time the number of TB cases diagnosed in foreign-born persons in Arizona exceeded the number of cases among the U.S.-born, 55.9% versus 44.1% (Figure 3). The greatest proportion of foreign-born persons with TB in Arizona in 2000 were born in Mexico (66.0%). Other reported countries of origin include Vietnam (5.4%), the Philippines (4.1%) and India (2.7%). The remaining 32 cases are from 22 other countries (Figure 4).

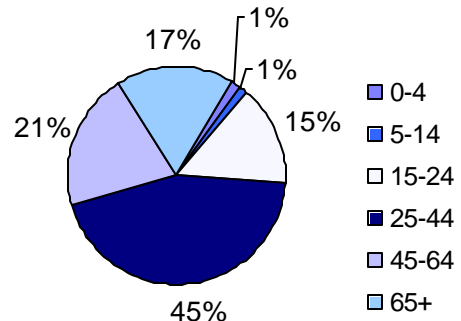


Age distribution differs between U.S.-born and foreign-born persons with a greater mean age among those born in the U.S., 47.3 years versus 41.2 years. The largest number of cases among U.S.-born persons occurred in individuals age 45 and older, who accounted for 56% of the cases compared to 38% in foreign-born persons (Figures 5 and 6). It is significant to note that the number of reported cases in U.S.-born persons age 25 and older have declined from 1995 through 2000 (Figure 7). In contrast, considerable increases were observed during the same period of time among foreign-born cases in the 15-24 and 25-44 age groups (Figure 8).

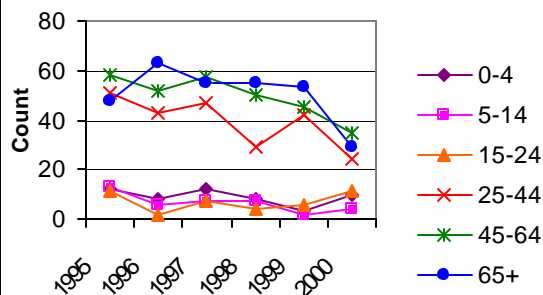
**Figure 5. TB Cases Among U.S.-born Persons by Age Group, Arizona, 2000**



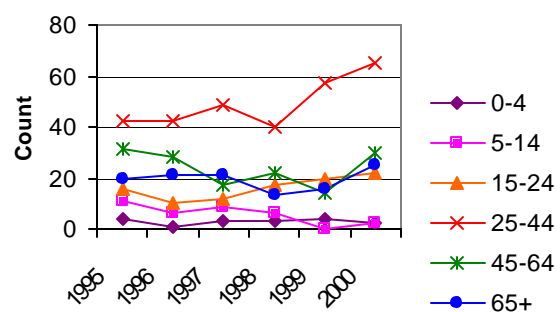
**Figure 6. TB Cases Among Foreign-born Persons by Age Group, Arizona 2000**



**Figure 7. TB Cases Among US-born Persons by Age Group, Arizona, 1995-2000**



**Figure 8. TB Cases Among Foreign-born Persons by Age Group, Arizona, 1995-2000**

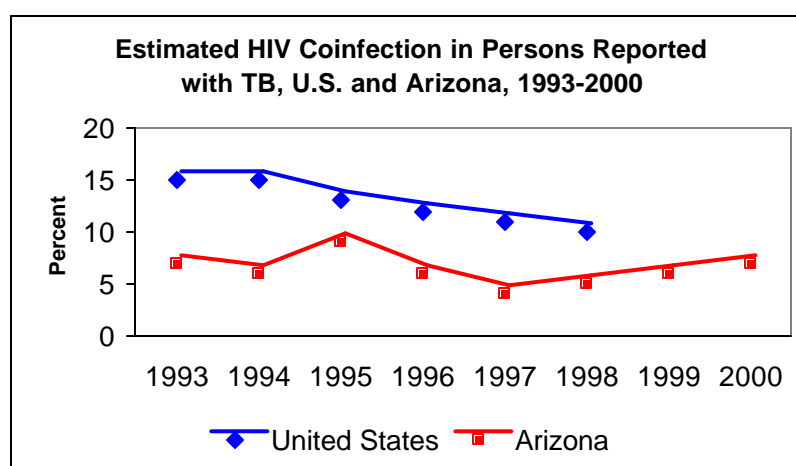


Homelessness is another important risk factor for TB in Arizona with the percent of TB cases among homeless persons in 1999 2.2 times higher than the national average of 6.3%. The percent of TB cases among homeless persons in Arizona increased slightly in 2000 to 14.6% of cases statewide.

Nationally, the percent of TB cases diagnosed in correctional facilities decreased from 4.1% in 1995 to 3.3% in 1999. In contrast, in 2000, the percent of TB cases diagnosed in Arizona correctional facilities increased to 8% (21) of total cases, the third highest percent of correctional TB cases reported in the U.S. A growing challenge has been the increasing number of Immigration and Naturalization Service (INS) detainees diagnosed with TB while in custody (15 in 2000, compared with an average of 6 per year in the previous 3 years). Few detainees complete treatment while in custody and follow-up information is scarce. In 2000, Arizona's TB Control Program began actively enrolling every TB suspect who is in INS

custody in the bi-national TB referral program, CURE-TB, offered by the San Diego TB Control Program. It is too early to tell if this will enhance completion of therapy rates in this small but important population.

While the proportion of TB cases co-infected with HIV has been declining nationally, from 15% in 1993 to 10% in 1998, this trend is also not apparent in Arizona. In 2000, 7% of Arizona TB cases were reported to be co-infected with HIV (Figure 9). During the years 1993 to 1998 (the last year for which national data is available), the proportion of TB cases for which HIV results are known has increased significantly. This increase has been much greater in Arizona (from 17% to 51%) than nationally (30% to 45%) which may account for some of the narrowing of the gap in reported co-infection (Table 3).



**Table 3. Percent of TB Cases with Reported HIV Results and Percent with HIV Coinfection, U.S. and Arizona, 1993-2000**

Year	25 – 44 Years Old				All Ages			
	HIV test results known <sup>a</sup>		HIV positive <sup>b</sup>		HIV test results known <sup>a</sup>		HIV positive <sup>b</sup>	
	U.S. (%)	AZ (%)	U.S. (%)	AZ (%)	U.S. (%)	AZ (%)	U.S. (%)	AZ (%)
1993	46	38	29	19	30	17	15	7
1994	49	28	29	15	33	15	15	6
1995	52	53	26	19	36	33	13	9
1996	57	65	25	13	41	44	12	6
1997	60	69	21	10	44	45	11	4
1998	60	77	20	16	45	51	10	5
1999		84		10		60		6
2000		73		14		61		7

<sup>a</sup>Based on reported HIV -positive status among all TB cases in the age group. Rhode Island reported HIV test results during 1998. HIV test results were not reported from California. California did provide HIV status for TB cases in persons also reported with AIDS.

<sup>b</sup>Includes cases with HIV -positive test results and California cases also reported with AIDS. Percentages based on all reported TB cases.

## Drug susceptibility

Initial drug susceptibility testing was obtained on ninety-seven percent of culture-proven TB cases in Arizona in 2000. Overall, drug resistance patterns have not changed significantly in recent years (Table 4). However, rates of INH resistance and multi-drug resistance are significantly higher in cases among the foreign-born, while other drug resistance patterns are generally somewhat higher among the U.S.-born.

**Table 4. Drug Resistance Patterns among U.S.-born and Foreign-born, Arizona, 1995-2000<sup>a</sup>**

Year	INH Resistance <sup>b</sup>			MDR <sup>c</sup>			Other Drug Resistance <sup>d</sup>		
	U.S.-born No. (%)	Foreign- born No. (%)	Total No. (%)	U.S.- born No. (%)	Foreign- born No. (%)	Total No. (%)	U.S.-born No. (%)	Foreign- born No. (%)	Total No. (%)
1995	2 (<1)	6 (7)	8 (3)	0 (0)	3 (4)	3 (1)	18 (12)	12 (14)	30 (13)
1996	1 (<1)	5 (6)	6 (3)	2 (1)	5 (6)	7 (3)	19 (13)	4 (5)	23 (10)
1997	8 (6)	10 (12)	18 (8)	1 (1)	1 (1)	2 (1)	17 (12)	5 (6)	22 (10)
1998	6 (5)	4 (5)	10 (5)	0 (0)	1 (1)	1 (1)	10 (8)	4 (5)	14 (7)
1999	3 (2)	4 (4)	7 (3)	0 (0)	1 (2)	2 (1)	17 (13)	9 (9)	26 (12)
2000	2 (2)	13 (10)	15 (7)	0 (0)	2 (2)	2 (1)	10 (11)	9 (7)	19 (9)

<sup>a</sup>More than 95% of isolates had susceptibility testing performed.

<sup>b</sup>Resistant to at least isoniazid without rifampin resistance.

<sup>c</sup>Resistant to at least isoniazid and rifampin (multi-drug resistance).

<sup>d</sup>Other drug resistance without isoniazid resistance.